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SWERNOFSKY LAW GROUP PC
P.O. BOX 390013
MOUNTAIN VIEW, CA 94039-0013

EXAMINER
LOHN, JOSHUA A

ART UNIT	PAPER NUMBER
2114	7

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 09/642,064	**Applicant(s)** SCHOENTHAL, SCOTT
	Examiner Joshua A Lohn	**Art Unit** 2114

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8, 10-17, 19-29, 31-38, 40-43, 45-56, 58-64 and 66-78* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 10-17, 19-29, 31-38, 40-43, 45-56, 58-64 and 66-78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-78 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 10-11, 13-17, 19-20, 46-47, 50-55, 58-59, 61-64, 66-67, 71-72, 75, and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by Lowell et al., "Persistent Messages in Local Transactions", presented at 17th ACM Symposium on Principles of Distributed Computing, June 1998.

As per claim 1, Lowell discloses persistently maintaining in a persistent memory at least one event message until at least one intended recipient of the event message confirms delivery of the event message, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6. Lowell discloses upon recovery from an error, replaying the event message, see section 5, paragraph 8. Lowell also discloses the event message being reliably delivered to the intended message, see section 5, paragraph 9.

As per claim 2, Lowell discloses receiving the event message by the intended recipient, see section 5.1, paragraph 3, and generating a confirmation of the event message in response to the event message, see section 5.1, paragraph 4.

As per claim 3, Lowell discloses the message being provided by an event message producer, in this case the client, see section 5.1, paragraph 2.

As per claim 4, Lowell discloses the persistent maintenance includes recording of the event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6. Lowell also discloses having the resources for the message queue pre-allocated before the occurrence of the event associated with the event message. This is shown in the boot process where a persistent memory is created that is then used for the later logging of messages, see section 2.2, paragraphs 2-3.

As per claim 5, Lowell discloses a system in which the event-indication queue used for storing messages is reliable even when the event message indicates that allocation of new resources is unstable. This is shown in the messages being stored in a persistent buffer space that stores all messages and operates independently of the rest of the system to maintain messages even in the event of system crashes, or similar events that cause the system resources to be unstable, see section 5, paragraphs 3-5.

As per claim 6, Lowell discloses recording event messages during a duration when delivery of the event message is not yet feasible, such as in the event that the destination is not operational, see section 5, paragraphs 7-9.

As per claim 7, Lowell discloses replaying an event message when a duration in which transmission is not possible ends and reliably delivering the message to the intended recipient, see section 5, paragraphs 8-9.

As per claim 10, Lowell discloses the delivery of the message including receiving a

confirmation of the delivery and removing the event message for the persistent memory in

response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 11, Lowell discloses recording event messages into a persistent memory

during a duration when delivery of the event message is not yet feasible, such as in the event that

the destination is not operational, see section 5, paragraphs 7-9. Lowell discloses replaying an

event message when a duration in which transmission is not possible ends and reliably delivering

the message to the intended recipient, see section 5, paragraphs 8-9. Lowell also discloses the

event message being reliably delivered to the intended message, see section 5, paragraph 9.

As per claim 13, Lowell discloses the message being provided by an event message

producer, in this case the client, see section 5.1, paragraph 2.

As per claim 14, Lowell discloses persistently maintaining at least one event message

until at least one recipient of the message confirms delivery of the message, see section 5,

paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6.

As per claim 15, Lowell discloses upon recovery from an error, replaying the event

message, see section 5, paragraph 8. Lowell also discloses the event message being reliably

delivered to the intended message, see section 5, paragraph 9.

As per claim 16, Lowell discloses the persistent maintenance includes recording of the

event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6.

Lowell also discloses having the resources for the message queue pre-allocated before the

occurrence of the event associated with the event message. This is shown in the boot process

where a persistent memory is created that is then used for the later logging of messages, see section 2.2, paragraphs 2-3.

As per claim 17, Lowell discloses a system in which the event-indication queue used for storing messages is reliable even when the event message indicates that allocation of new resources is unstable. This is shown in the messages being stored in a persistent buffer space that stores all messages and operates independently of the rest of the system to maintain messages even in the event of system crashes, or similar events that cause the system resources to be unstable, see section 5, paragraphs 3-5.

As per claim 19, Lowell discloses delivering the event message to the intended recipient as well as receiving a confirmation of the delivery and removing the event message for the persistent memory in response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 20, Lowell discloses receiving the event message by the intended recipient, see section 5.1, paragraph 3, and generating a confirmation of the event message in response to the event message, see section 5.1, paragraph 4.

As per claim 46, Lowell discloses a software program, see section 1, first paragraph, for persistently maintaining in a persistent memory at least one event message until at least one intended recipient of the event message confirms delivery of the event message, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6. Lowell discloses upon recovery from an error, replaying the event message, see section 5, paragraph 8. Lowell also discloses the event message being reliably delivered to the intended message, see section 5, paragraph 9.

As per claim 47, Lowell discloses recording event messages during a duration when delivery of the event message is not yet feasible, such as in the event that the destination is not operational, see section 5, paragraphs 7-9.

As per claim 50, Lowell discloses an apparatus for persistently maintaining in a persistent memory at least one event message until at least one intended recipient of the event message confirms delivery of the event message, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6. Lowell discloses upon recovery from an error, replaying the event message, see section 5, paragraph 8.

As per claim 51, Lowell discloses an apparatus for receiving the event message by the intended recipient, see section 5.1, paragraph 3, and generating a confirmation of the event message in response to the event message, see section 5.1, paragraph 4.

As per claim 52, Lowell discloses an apparatus in which the persistent maintenance includes recording of the event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6. Lowell also discloses having the resources for the message queue pre-allocated before the occurrence of the event associated with the event message. This is shown in the boot process where a persistent memory is created that is then used for the later logging of messages, see section 2.2, paragraphs 2-3.

As per claim 53, Lowell discloses an apparatus in which the event-indication queue used for storing messages is reliable even when the event message indicates that allocation of new resources is unstable. This is shown in the messages being stored in a persistent buffer space that stores all messages and operates independently of the rest of the system to maintain messages

even in the event of system crashes, or similar events that cause the system resources to be

unstable, see section 5, paragraphs 3-5.

As per claim 54, Lowell discloses recording event messages during a duration when

delivery of the event message is not yet feasible, such as in the event that the destination is not

operational, see section 5, paragraphs 7-9.

As per claim 55, Lowell discloses replaying an event message when a duration in which

transmission is not possible ends and reliably delivering the message to the intended recipient,

see section 5, paragraphs 8-9.

As per claim 58, Lowell discloses the delivery of the message including receiving a

confirmation of the delivery and removing the event message for the persistent memory in

response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 59, Lowell discloses an apparatus for recording event messages into a

persistent memory during a duration when delivery of the event message is not yet feasible, such

as in the event that the destination is not operational, see section 5, paragraphs 7-9. Lowell

discloses replaying an event message when a duration in which transmission is not possible ends

and reliably delivering the message to the intended recipient, see section 5, paragraphs 8-9.

Lowell also discloses the event message being reliably delivered to the intended message, see

section 5, paragraph 9.

As per claim 61, Lowell discloses an apparatus for persistently maintaining in a

persistent memory at least one event message until at least one intended recipient of the event

message confirms delivery of the event message, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6.

As per claim 62, Lowell discloses upon recovery from an error, replaying the event message, see section 5, paragraph 8.

As per claim 63, Lowell discloses the persistent maintenance includes recording of the event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6. Lowell also discloses having the resources for the message queue pre-allocated before the occurrence of the event associated with the event message. This is shown in the boot process where a persistent memory is created that is then used for the later logging of messages, see section 2.2, paragraphs 2-3.

As per claim 64, Lowell discloses an apparatus in which the event-indication queue used for storing messages is reliable even when the event message indicates that allocation of new resources is unstable. This is shown in the messages being stored in a persistent buffer space that stores all messages and operates independently of the rest of the system to maintain messages even in the event of system crashes, or similar events that cause the system resources to be unstable, see section 5, paragraphs 3-5.

As per claim 66, Lowell discloses the delivery of the message including receiving a confirmation of the delivery and removing the event message for the persistent memory in response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 67, Lowell discloses receiving the event message by the intended recipient, see section 5.1, paragraph 3, and generating a confirmation of the event message in response to the event message, see section 5.1, paragraph 4.

As per claim 71, Lowell discloses a persistent memory including a persistent record of at least one event message stored until at least one intended recipient of the message confirms delivery of the message, see section 5, paragraphs 3-9, and section 5.1, paragraph 6. Lowell also discloses upon recovery from an error replaying the message, see section 5, paragraphs 8-9.

As per claim 72, Lowell discloses recording event messages during a duration when delivery of the event message is not yet feasible, such as in the event that the destination is not operational, see section 5, paragraphs 7-9.

As per claim 75, Lowell discloses a persistent memory for reliably delivering event messages that includes a persistent record of at least one event message until at least one intended recipient of the event message confirms delivery of the event message, See section 5, paragraphs 3-9, and section 5.1, paragraph 6. Lowell also discloses upon recovery from an error having a replayable instance of the message, see section 5, paragraphs 8-9.

As per claim 76, Lowell discloses recording event messages during a duration when delivery of the event message is not yet feasible, such as in the event that the destination is not operational, see section 5, paragraphs 7-9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8, 12, 33-38, 40-43, 45, 49, 56, 60, 69, 70, 74, and 78 are rejected under 35

U.S.C. 103(a) as being unpatentable over Lowell et al.

As per claim 8, Lowell discloses persistent maintenance that includes recording the event

message during a duration when delivery of the message is not yet feasible, see section 5,

paragraphs 8-9. Lowell fails to disclose the duration including a boot time or an initialization

time.

It would have been obvious to one skilled in the art at the time the invention was made to

include a boot time or initialization time in the period over which delivery is not yet feasible in

the invention of Lowell.

This would have been obvious because Lowell teaches of recording and persistently

maintaining all messages that are generated and continually attempting transmission until an

acknowledgement of the message is received, see section 5, paragraphs 7-9. It would have been

obvious to one skilled in the art at the time the invention was made that successful transmission

is impossible when either the source or destination is in a boot or initialization time period. This

time period of unavailability for transmission would obviously have resulted in the invention of

Lowell not completing delivery until the boot or initialization time was completed.

As per claim 12, Lowell discloses persistent maintenance that includes recording the

event message during a duration when delivery of the message is not yet feasible, see section 5,

paragraphs 8-9. Lowell fails to disclose the duration including a boot time or an initialization

time.

It would have been obvious to one skilled in the art at the time the invention was made to include a boot time or initialization time in the period over which delivery is not yet feasible in the invention of Lowell.

This would have been obvious because Lowell teaches of recording and persistently maintaining all messages that are generated and continually attempting transmission until an acknowledgement of the message is received, see section 5, paragraphs 7-9. It would have been obvious to one skilled in the art at the time the invention was made that successful transmission is impossible when either the source or destination is in a boot or initialization time period. This time period of unavailability for transmission would obviously have resulted in the invention of Lowell not completing delivery until the boot or initialization time was completed.

As per claim 33, Lowell discloses the delivery of the message, see section 5.1, paragraphs 4-6. Lowell also discloses maintaining the event message in a persistent memory, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6, and reliably delivering the event message to at least one intended recipient of the event message. Lowell teaches of receiving the message from a process, storing the message persistently, and then delivering the message to the intended recipient, see section 5, paragraphs 3-8, and section 5.1, paragraphs 2-6. Lowell fails to explicitly teach of a multiplexing recipient being in control of this receiving, storing, and delivering.

It would have been well known to one skilled in the art at the time the invention was made that a client and server system can involve multiplex communications across a network. In

such a system all nodes on the network, client or server, would be recipients of multiplex

communications.

It would have been obvious to one skilled in the art at the time the invention was made to

implement the system of Lowell using multiplex communications.

This would have been obvious because Lowell discloses a fault tolerant system that is

useful for distributed networks involving at least a server and a client, see section 5, paragraphs 1

and 2. This system could obviously utilize multiplex communications between the network

entities as is well known in the art as a means for communicating across a network.

As per claim 34, Lowell discloses receiving the event message by the intended recipient,

see section 5.1, paragraph 3, and generating a confirmation of the event message in response to

the event message, see section 5.1, paragraph 4.

As per claim 35, Lowell discloses the message being provided by an event message

producer, in this case the client, see section 5.1, paragraph 2.

As per claim 36, Lowell discloses persistently maintaining in a persistent memory of an

obviously multiplexing system at least one event message until at least one intended recipient of

the event message confirms delivery of the event message, see section 5, paragraphs 3-5 and 8,

and section 5.1, paragraphs 2, 4, and 6. Lowell discloses upon recovery from an error, replaying

the event message to the intended recipient, see section 5, paragraph 8. Lowell also discloses the

event message being reliably delivered to the intended message, see section 5, paragraph 9.

As per claim 37, Lowell discloses the persistent maintenance includes recording of the

event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6.

Lowell also discloses having the resources for the message queue pre-allocated before the

occurrence of the event associated with the event message. This is shown in the boot process

where a persistent memory is created that is then used for the later logging of messages, see

section 2.2, paragraphs 2-3.

As per claim 38, Lowell discloses a system in which the event-indication queue used for

storing messages is reliable even when the event message indicates that allocation of new

resources is unstable. This is shown in the messages being stored in a persistent buffer space that

stores all messages and operates independently of the rest of the system to maintain messages

even in the event of system crashes, or similar events that cause the system resources to be

unstable, see section 5, paragraphs 3-5.

As per claim 40, Lowell discloses the delivery of the message including receiving a

confirmation of the delivery and removing the event message for the persistent memory in

response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 41, Lowell discloses Persistently maintaining the event message at the

obviously multiplexing recipient until at least one intended recipient of the message confirms

delivery of the message, see section 5.1, paragraph 6. Lowell also discloses the sender

transmitting a confirmation in response to the confirmation of the delivery from the recipient,

this is because every message of the client and server contains confirmation of previous

transaction in addition to any new transaction, see section 5.1, paragraphs 1-7.

As per claim 42, Lowell discloses the persistent maintenance includes recording of the

event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6.

Lowell also discloses having the resources for the message queue pre-allocated before the

occurrence of the event associated with the event message. This is shown in the boot process

where a persistent memory is created that is then used for the later logging of messages, see

section 2.2, paragraphs 2-3.

As per claim 43, Lowell discloses a system in which the event-indication queue used for

storing messages is reliable even when the event message indicates that allocation of new

resources is unstable. This is shown in the messages being stored in a persistent buffer space that

stores all messages and operates independently of the rest of the system to maintain messages

even in the event of system crashes, or similar events that cause the system resources to be

unstable, see section 5, paragraphs 3-5.

As per claim 45, Lowell discloses the delivery of the message including receiving a

confirmation of the delivery and removing the event message for the persistent memory in

response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 49, Lowell discloses performing his methods with a software program, see

section 1, first paragraph. This software program performs all the same limitations as those

described in the rejection of claim 33 shown above. Claim 49 is thus rejected under those

grounds in addition to the use of software code.

As per claim 56, Lowell discloses an apparatus for persistent maintenance that includes

recording the event message during a duration when delivery of the message is not yet feasible,

see section 5, paragraphs 8-9. Lowell fails to disclose the duration including a boot time or an

initialization time.

It would have been obvious to one skilled in the art at the time the invention was made to include a boot time or initialization time in the period over which delivery is not yet feasible in the invention of Lowell.

This would have been obvious because Lowell teaches of recording and persistently maintaining all messages that are generated and continually attempting transmission until an acknowledgement of the message is received, see section 5, paragraphs 7-9. It would have been obvious to one skilled in the art at the time the invention was made that successful transmission is impossible when either the source or destination is in a boot or initialization time period. This time period of unavailability for transmission would obviously have resulted in the invention of Lowell not completing delivery until the boot or initialization time was completed.

As per claim 60, Lowell discloses an apparatus for persistent maintenance that includes recording the event message during a duration when delivery of the message is not yet feasible, see section 5, paragraphs 8-9. Lowell fails to disclose the duration including a boot time or an initialization time.

It would have been obvious to one skilled in the art at the time the invention was made to include a boot time or initialization time in the period over which delivery is not yet feasible in the invention of Lowell.

This would have been obvious because Lowell teaches of recording and persistently maintaining all messages that are generated and continually attempting transmission until an acknowledgement of the message is received, see section 5, paragraphs 7-9. It would have been obvious to one skilled in the art at the time the invention was made that successful transmission

is impossible when either the source or destination is in a boot or initialization time period. This time period of unavailability for transmission would obviously have resulted in the invention of Lowell not completing delivery until the boot or initialization time was completed.

As per claim 69, Lowell discloses an apparatus for the delivery of the message, see section 5.1, paragraphs 4-6. Lowell also discloses maintaining the event message in a persistent memory, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6, and reliably delivering the event message to at least one intended recipient of the event message. Lowell teaches of receiving the message from a process, storing the message persistently, and then delivering the message to the intended recipient, see section 5, paragraphs 3-8, and section 5.1, paragraphs 2-6. Lowell fails to explicitly teach of a multiplexing recipient being in control of this receiving, storing, and delivering.

It would have been well known to one skilled in the art at the time the invention was made that a client and server system can involve multiplex communications across a network. In such a system all nodes on the network, client or server, would be recipients of multiplex communications.

It would have been obvious to one skilled in the art at the time the invention was made to implement the system of Lowell using multiplex communications.

This would have been obvious because Lowell discloses a fault tolerant system that is useful for distributed networks involving at least a server and a client, see section 5, paragraphs 1 and 2. This system could obviously utilize multiplex communications between the network entities as is well known in the art as a means for communicating across a network.

As per claim 70, Lowell discloses an apparatus for receiving the event message by the intended recipient, see section 5.1, paragraph 3, and generating a confirmation of the event message in response to the event message, see section 5.1, paragraph 4.

As per claim 74, Lowell discloses the reliable delivery of an event message, see section 5.1, paragraphs 4-6. Lowell also discloses maintaining the event message in a persistent memory, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6, and having a deliverable instance of an event message for delivery at least one intended recipient of the event message. Lowell teaches of a persistent record of at least one event message and the deliverable instance message of the message for the intended recipient, see section 5, paragraphs 3-8, and section 5.1, paragraphs 2-6. Lowell fails to explicitly teach of a multiplexing recipient being in control of this receiving, storing, and delivering.

It would have been well known to one skilled in the art at the time the invention was made that a client and server system can involve multiplex communications across a network. In such a system all nodes on the network, client or server, would be recipients of multiplex communications.

It would have been obvious to one skilled in the art at the time the invention was made to implement the system of Lowell using multiplex communications.

This would have been obvious because Lowell discloses a fault tolerant system that is useful for distributed networks involving at least a server and a client, see section 5, paragraphs 1 and 2. This system could obviously utilize multiplex communications between the network entities as is well known in the art as a means for communicating across a network.

As per claim 78, Lowell discloses maintaining a persistent record of at least one event message in a persistent memory, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6, and having a deliverable instance of an event message for delivery at least one intended recipient of the event message. Lowell teaches of storing the message persistently and of having the deliverable instance message of the message for the intended recipient, see section 5, paragraphs 3-8, and section 5.1, paragraphs 2-6. Lowell fails to explicitly teach of a multiplexing recipient being in control of this receiving, storing, and delivering.

It would have been well known to one skilled in the art at the time the invention was made that a client and server system can involve multiplex communications across a network. In such a system all nodes on the network, client or server, would be recipients of multiplex communications.

It would have been obvious to one skilled in the art at the time the invention was made to implement the system of Lowell using multiplex communications.

This would have been obvious because Lowell discloses a fault tolerant system that is useful for distributed networks involving at least a server and a client, see section 5, paragraphs 1 and 2. This system could obviously utilize multiplex communications between the network entities as is well known in the art as a means for communicating across a network.

Claims 21-29, 31, 32, 48, 68, 73, and 77 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lowell et al. in further view of Borg et al., "Fault Tolerance Under UNIX",

ACM Transactions on Computer Systems, vol. 7, no. 1, published February 1989.

As per claim 21, Lowell discloses maintaining at least one event message in a persistent

memory, see section 5, paragraphs 3-5. Lowell also discloses replaying an event message when

recovering from an error, see section 5, paragraphs 8 and 9, and ensuring that the event message

is reliably delivered to an intended recipient. Lowell fails to disclose a system with a first and

second server device having access to a plurality of memory locations with the second server

able to replay the messages in the event of failure of the first.

Borg discloses storing messages in a plurality of persistent memory locations accessible

to both the first and second server devices, see section 2.1 on page 4. Borg further discloses

error recovery from the first server device including replaying the event message by the second

device, see section 5.3 on page 17.

It would have been obvious to one skilled in the art at the time the invention was made to

implement the two-server system of Borg in the fault tolerant system of Lowell.

This would have been obvious because Lowell shows a desire to create a system that is

capable of being restored after a crash, see section 1, first paragraph. Lowell also admits that the

system developed to aid in restoration is only useful if the failures are temporary problems, see

section 2.3, paragraph 5. It would have been obvious to one skilled in the art at the time the

invention was made that the invention of Lowell in incomplete and an ability to recover from a

permanent failure, such as an irreparable system crash, would be desirable. Borg teaches a

system that can be used to recover from a complete system crash, see section 1.2 on page 3. This system utilizes redundantly operating machines that could easily utilize the fault tolerant system disclosed by Lowell. The recoverability of Lowell is obviously enhanced by having a redundant server in operation should a permanent failure occur in the first server, as is shown by Borg.

As per claim 22, Lowell discloses the message being provided by an event message producer, in this case the client, see section 5.1, paragraph 2.

As per claim 23, Lowell discloses recording event messages during a duration when delivery of the event message is not yet feasible, such as in the event that the destination is not operational, see section 5, paragraphs 7-9.

As per claim 24, Lowell discloses replaying an event message when a duration in which transmission is not possible ends and reliably delivering the message to the intended recipient, see section 5, paragraphs 8-9.

As per claim 25, Lowell discloses persistent maintenance that includes recording the event message during a duration when delivery of the message is not yet feasible, see section 5, paragraphs 8-9. Lowell fails to disclose the duration including a boot time or an initialization time.

It would have been obvious to one skilled in the art at the time the invention was made to include a boot time or initialization time in the period over which delivery is not yet feasible in the invention of Lowell.

This would have been obvious because Lowell teaches of recording and persistently maintaining all messages that are generated and continually attempting transmission until an acknowledgement of the message is received, see section 5, paragraphs 7-9. It would have been obvious to one skilled in the art at the time the invention was made that successful transmission is impossible when either the source or destination is in a boot or initialization time period. This time period of unavailability for transmission would obviously have resulted in the invention of Lowell not completing delivery until the boot or initialization time was completed.

As per claim 26, Lowell discloses the message being provided by an event message producer, in this case the client, see section 5.1, paragraph 2.

As per claim 27, Lowell discloses persistently maintaining in a persistent memory at least one event message until at least one intended recipient of the event message confirms delivery of the event message, see section 5, paragraphs 3-5 and 8, and section 5.1, paragraphs 2, 4, and 6.

As per claim 28, Lowell discloses the persistent maintenance includes recording of the event messages in an event-indication queue, or message buffer, see section 5.1, paragraphs 2-6. Lowell also discloses having the resources for the message queue pre-allocated before the occurrence of the event associated with the event message. This is shown in the boot process where a persistent memory is created that is then used for the later logging of messages, see section 2.2, paragraphs 2-3.

As per claim 29, Lowell discloses a system in which the event-indication queue used for storing messages is reliable even when the event message indicates that allocation of new resources is unstable. This is shown in the messages being stored in a persistent buffer space that

stores all messages and operates independently of the rest of the system to maintain messages even in the event of system crashes, or similar events that cause the system resources to be unstable, see section 5, paragraphs 3-5.

As per claim 31, Lowell discloses the delivery of the message including receiving a confirmation of the delivery and removing the event message for the persistent memory in response to the confirmation, see section 5.1, paragraphs 4-6.

As per claim 32, Lowell discloses receiving the event message by the intended recipient, see section 5.1, paragraph 3, and generating a confirmation of the event message in response to the event message, see section 5.1, paragraph 4.

As per claim 48, Lowell discloses performing his methods with a software program, see section 1, first paragraph. This software program performs all the same limitations as those described in the rejection of claim 21 shown above. Claim 48 is thus rejected under those grounds in addition to the use of software code.

As per claim 68, Lowell discloses an apparatus maintaining at least one event message in a persistent memory, see section 5, paragraphs 3-5. Lowell also discloses replaying an event message when recovering from an error, see section 5, paragraphs 8 and 9, and ensuring that the event message is reliably delivered to an intended recipient. Lowell fails to disclose a system with a first and second server device having access to a plurality of memory locations with the second server able to replay the messages in the event of failure of the first.

Borg discloses storing messages in a plurality of persistent memory locations accessible

to both the first and second server devices, see section 2.1 on page 4. Borg further discloses

error recovery from the first server device including replaying the event message by the second

device, see section 5.3 on page 17.

It would have been obvious to one skilled in the art at the time the invention was made to

implement the two server system of Borg in the fault tolerant system of Lowell.

This would have been obvious because Lowell shows a desire to create a system that is

capable of being restored after a crash, see section 1, first paragraph. Lowell also admits that the

system developed to aid in restoration is only useful if the failures are temporary problems, see

section 2.3, paragraph 5. It would have been obvious to one skilled in the art at the time the

invention was made that the invention of Lowell in incomplete and an ability to recover from a

permanent failure, such as an irreparable system crash, would be desirable. Borg teaches a

system that can be used to recover from a complete system crash, see section 1.2 on page 3. This

system utilizes redundantly operating machines that could easily utilize the fault tolerant system

disclosed by Lowell. The recoverability of Lowell is obviously enhanced by having a redundant

server in operation should a permanent failure occur in the first server, as is shown by Borg.

As per claim 73, Lowell discloses maintaining at least one event message in a persistent

memory, see section 5, paragraphs 3-5. Lowell also discloses replaying an event message when

recovering from an error, see section 5, paragraphs 8 and 9. Lowell fails to disclose a system

with a first and second server device having access to a plurality of memory locations with the

second server able to replay the messages in the event of failure of the first.

Borg discloses storing messages in a plurality of persistent memory locations accessible

to both the first and second server devices, see section 2.1 on page 4. Borg further discloses

error recovery from the first server device including replaying the event message by the second

device, see section 5.3 on page 17.

It would have been obvious to one skilled in the art at the time the invention was made to

implement the two server system of Borg in the fault tolerant system of Lowell.

This would have been obvious because Lowell shows a desire to create a system that is capable

of being restored after a crash, see section 1, first paragraph. Lowell also admits that the system

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2.3, paragraph 5. It would have been obvious to one skilled in the art at the time the invention

was made that the invention of Lowell in incomplete and an ability to recover from a permanent

failure, such as an irreparable system crash, would be desirable. Borg teaches a system that can

be used to recover from a complete system crash, see section 1.2 on page 3. This system utilizes

redundantly operating machines that could easily utilize the fault tolerant system disclosed by

Lowell. The recoverability of Lowell is obviously enhanced by having a redundant server in

operation should a permanent failure occur in the first server, as is shown by Borg.

As per claim 77, Lowell discloses at least one event message in a persistent memory, see

section 5, paragraphs 3-5. Lowell also discloses replaying an event message when recovering

from an error, see section 5, paragraphs 8 and 9. Lowell fails to disclose a system with a first

and second server device having access to a plurality of memory locations with the second server

able to replay the messages in the event of failure of the first.

Borg discloses storing messages in a plurality of persistent memory locations accessible

to both the first and second server devices, see section 2.1 on page 4. Borg further discloses

error recovery from the first server device including replaying the event message by the second

device, see section 5.3 on page 17.

It would have been obvious to one skilled in the art at the time the invention was made to

implement the two server system of Borg in the fault tolerant system of Lowell.

This would have been obvious because Lowell shows a desire to create a system that is capable

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Lowell. The recoverability of Lowell is obviously enhanced by having a redundant server in

operation should a permanent failure occur in the first server, as is shown by Borg.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua A Lohn whose telephone number is (703) 305-3188. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoleil can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

JAL

SCOTT BADERMAN
PRIMARY EXAMINER